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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/636,007	08/07/2003	Eric Lawrence Upton	000308-804/TRWP121US	1537
23623	7590	11/01/2004	EXAMINER	
AMIN & TUROCY, LLP 1900 EAST 9TH STREET, NATIONAL CITY CENTER 24TH FLOOR, CLEVELAND, OH 44114			KIANNI, KAVEH C	
			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 11/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/636,007

Applicant(s)

UPTON, ERIC LAWRENCE

Examiner

K. Cyrus Kianni

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 16-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,7 and 12-15 is/are rejected.
- 7) ☒ Claim(s) 2,4,6 and 8-11 is/are objected to.
- 8) ☒ Claim(s) 16-30 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 August 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This application contains claims directed to the following patentably distinct species of the claimed invention: Group invention I, claims 1-15 are directed to system that generates signal delay through a reservoir with a reflective fluid and an optical fiber that is operative to the reservoir; Group invention II, claims 16-27 are directed to a method of generating signal delay through the steps of configuring a delay line for a desired delay and routing the received signal through the delay line, wherein the distance traveled by the signal *corresponding to the delay introduced into the signal*; Group invention III, claims 28-30 are directed to system that generates signal delay through a means for defining a delay to introduce into a received optical and means for routing the optical signal through a *holey* fiber to delay the signal. In which each of the above invention species require a different search than that of other inventions.

2. Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, none of the claims are generic. During a telephone conversation with Mr. Amin on 10/27 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-15. Affirmation of this election must be made by applicant in replying to this Office action. Claims 16-30 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Claim Objections

3. Claims 1 and 13 is objected to because of the following informalities: in the 4th line of claim 1, the misspelled 'a' should be 'an'; in the 1st–2nd lines of claim 13 the word 'reflective index' should be 'refractive index'. Appropriate corrections are required.

Allowable Subject Matter

4. Claims 2, 4, 6, and 8-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 2 is allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious a first and second plate and a retaining ring that surround the reservoir and the waveguide to maintain the reservoir proximate to the waveguide in combination with the rest of the limitations of the base claim.

Claim 4 is allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious the waveguide comprising a photonic crystal cladding comprising a plurality of air holes in combination with the rest of the limitations of the base claim.

Claim 6 is allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious further comprising an overflow reservoir operative to the waveguide to mitigate at least one of loss of reflective fluid and contamination of the reflective fluid in combination with the rest of the limitations of the base claim.

Claims 8-9 are allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious the pressure mechanism comprising a segmented piezoelectric device that includes a plurality of actuators in combination with the rest of the limitations of the base claim.

Claim 10 is allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious the first and second components assembled into a

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continuously variable delay line device that is 6 cm by 1 cm in combination with the rest of the limitations of the base claim.

Claim 11 is allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious the waveguide comprising an 8 micron diameter hollow core, six 32 micron diameter holes and a 125 micron diameter cladding in combination with the rest of the limitations of the base claim.

Claim Rejections – 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 3, 5, 7, 12, 13-14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dyudin (SU 699694).

Regarding claims 1, 3, 5, 12, and 13-14, Dyudin teaches a system that delays a signal (shown in fig. 1) comprising: a first component comprising: a reservoir 5 with a reflective fluid (see col. 3, lines 10-23); a waveguide 1 that is operative to the reservoir 5; a second component 4 that facilitate continuous movement of the reflective fluid from the reservoir to a location within the waveguide to adjust the effective length of the waveguide, the effective length of the waveguide corresponding to a desired delay, wherein the signal is delayed via routing the signal through the effective length of the

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waveguide in an immersible fluid (see fig. 1, item immersion controller/regulator 4 controls the level of liquid in the length/inside of waveguide for generation delay in reflected signal; see the translated 'title', 'title-terms, abstract; also see col. 3 3rd parag.- col. 4, 1st parag.).

However, Dyudin does not specifically teach wherein the above waveguide is an optical fiber, constructed to accept one of a single mode optical signal and a multimode optical signal; employed in an aerospace application, the signal comprising one of an optical signal and a radio frequency (RF) signal converted to an optical signal; the reflective fluid selected to achieve a refractive index mismatch between an optical medium within the waveguide and the reflective fluid to provide for at least one of low loss and wavelength band-limiting. Nevertheless, Dyudin states that the above system waveguide guides ultrasonic/acoustic signals (see abstract) which indicates that the waveguide is hollow to guide sound waves and it appears that the invention would perform equally well with that of applicant's hollow optical fiber, and thus if one desires as a matter of choice can input optical and/or RF signal to be guided in the hollow waveguide. Furthermore the waveguide system of Dyudin, having reflective fluid for desired delay, is concerned with reducing signal loss (see col. 1 and 2) which indicates that fluid is chosen with refractive index mismatch in order to reflect back the transmitted signal which is analogous to applicant's designed/claimed invention. Thus, it is obvious/well-known to those of ordinary skill in the art that waveguides carrying sound/ultrasonic signals have hollow core that are capable of carrying optical/RF waves/signals and therefore one of ordinary skill in the art as matter of design choice

would be able to send optical signal in the waveguide of Dyudin as well as using the waveguide system in variety of technologies such as aerospace since such system would provide regulated/controlled desired time delay (see col. 3, last parag.-col. 4, 1st parag.). Furthermore, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of **obvious design choice**. *In re Leshin*, 125 USPQ 416.

Regarding claims 7 and 15, Dyudin further teaches the second component employing at least one of a pressure and temperature mechanism to facilitate reflective fluid flow within the waveguide (see col. 3); the waveguide 1 configured in a spiral layout (shown in fig. 1, item spiraled waveguide 1), wherein one end of the spiral is operative to the reflective fluid reservoir 5 and the other end is operative to a signal input port 3/2.

- Examiner notes that, if necessary, a complete translation of the above reference maybe provided by the examiner in the next office action.

Citation of Relevant Prior Art

7. Prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In accordance with MPEP 707.05 the following references are pertinent in rejection of this application since they provide substantially the same information disclosure as this patent does. These references are:

Haynie et al. WO 97/39315

Haynie et al. 5822274

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Kersey et al. 6785004

Kanai et al. 5204921

These references are cited herein to show the relevance of the apparatus/methods taught within these references as prior art.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Cyrus Kianni whose telephone number is (571) 272-2417.

The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 6:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font, can be reached at (571) 272-2415.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9306 (for formal communications intended for entry)

or:

Hand delivered responses should be brought to Crystal Plaza 4, 2021 South Clark Place, Arlington, VA., Fourth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956.



K. Cyrus Kianni
Patent Examiner
Group Art Unit 2883

October 29, 2004